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TRANSMITTAL OF APPEAL BRIEF

Docket No.
AGERE 3.0-005

In re Application of: Alfons Eizenhoefer, Peter Kuczynski, and Said Tatesh

Application No.	Filing Date	Examiner	Group Art Unit
09/356,260	July 16, 1999	K. Thangavelu	2123

Invention: METHOD AND SYSTEM FOR SIGNALLING

TO THE COMMISSIONER FOR PATENTS:

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Dated: May 15, 2006

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Docket No.: AGERE 3.0-005
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of: Eizenhoefer et al.	
Application No.: 09/356,260	Group Art Unit: 2123
Filed: July 16, 1999	Examiner: K. Thangavelu
For: METHOD AND SYSTEM FOR SIGNALLING	

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicants hereby file this brief on Appeal to appeal from the final rejection of claims 20-38 mailed December 7, 2005.

REAL PARTY IN INTEREST

The real party in interest is the assignee of record for the current application, which is Agere Systems Inc.

RELATED APPEALS AND INTERFERENCES

To the best of Applicants' current knowledge, there are no related appeals and interferences pending before the U.S. Patent and Trademark Office regarding this United States patent application.

STATUS OF CLAIMS

Claims 1-19 were canceled from the present application. Claims 20-38 are pending in this Application. Claims 20-38 stand rejected and are subject to this appeal. Applicants attach a clean copy of the claims which are attached to this appeal as Appendix A.

STATUS OF AMENDMENTS

There are no previously unentered amendments and no amendment is submitted herewith.

SUMMARY OF CLAIMED SUBJECT MATTER

The invention as set forth in claims 20-31 is directed to a method for transmitting information in a frame-based transmission system. (Specification 2 ll.14-16.) The invention is described in the context of, and is applied to, a mobile communications system. In a mobile communications system there is a downlink, defined as a link from a network to a mobile, and an uplink defined as a link from the mobile to the network. (Specification 5 ll.20-23.)

Claim 20 recites a method of transmission in a multi-frame system and specifically for transmitting first and second type of control information. (Specification 2 ll.14-17.) The second type of control information comprises a code word that is partitioned among consecutive frames. (Specification at 4 ll.13 to p.5 ll.3.) The significance of the second type of control information and how it is partitioned among consecutive frames and transmitted is best understood with reference to FIG. 2 and the accompanying text at page 6, lines 9-16. For convenience, an annotated version of FIG. 2 is provided following this description. This annotated version of FIG. 2 was submitted with Applicants' prior response dated September 28, 2004. In annotated FIG. 2, the frame gaps of each frame that are related to the downlink and the frame gaps (*i.e.*, sections) related to the uplink are indicated at the top of the figure. The column headings have been slightly modified to further clarify the purpose of the bits in the various frame gaps.

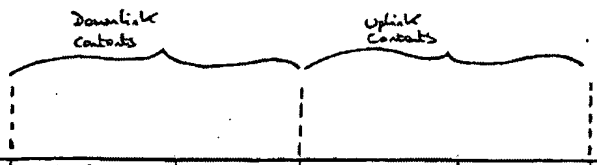
The information in column 2 is the three bit "actual mode signaling codeword for downlink." This is the actual code word

transmitted in a frame of the downlink that represents the coding applied to the data in that frame.

The information in column 3 is the multi-frame signaling bit used for characterizing the coding mode command for the uplink. This signaling bit is sent in the downlink. (*See* Specification 6 11.11-12.) These bits in column 3 are the multi-frame bits that are sent in the downlink to the mobile, and then used by the mobile as the coding mode commands for an uplink transmission (*i.e.*, transmissions from the mobile). Each bit in column 3 is the "section of the partitioned second type of control information" recited in certain claims (*e.g.*, claim 20). Thus, the multi-frame bits transmitted in the downlink represent the actual coding mode to be used in the uplink. The heading of frame section 3 on annotated FIG. 2 below, provided for pedagogic purposes, is modified to emphasize that the mode command bit in the downlink is used to characterize the coding mode for the uplink.

The information in column 4 is the three bit actual mode codeword used for signaling of the coding mode for the uplink. (*See* Specification 6 11.13-14.) This is the actual code word transmitted in a frame of the uplink, and it represents the coding applied to the data in that frame.

The information in column 5 is the multi-frame signaling bit of the uplink used for characterizing the transmission quality of the downlink as received and measured by the mobile part. (*See* Specification 6 11.14-15.) These are the multi-frame bits that are sent in the uplink to the network, representing the transmission quality of the downlink. The column header of column 5 in annotated FIG. 2 below is also modified slightly to emphasize the relationship between the information in the uplink to the downlink.



Frame Number	actual mode signalling codeword for downlink	mode Command for uplink encoding (bits)	actual mode signalling codeword for uplink	Quality measured in downlink (bits)	Action
0	010 (Mode 3)	0 (LSB)	010 (Mode 3)	0 (LSB) (assumed)	no change of codec mode
1	010 (Mode 3)	1	010 (Mode 3)	1 (assumed)	no change of codec mode
2	010 (Mode 3)	0 (MSB)	010 (Mode 3)	1 (MSB) (assumed)	no change of codec mode, mode command word collected, quality word collected (=110)
3	010 (Mode 3)	1 (LSB)	010 (Mode 3)	1 (LSB) (assumed)	change of codec mode 3 to 2
4	010 (Mode 3)	0	010 (Mode 3)	0 (assumed)	change of codec mode 3 to 2
5	010 (Mode 3)	0 (MSB)	010 (Mode 3)	1 (MSB) (assumed)	change of codec mode 3 to 2, mode command word collected, quality word collected (=101)
6	001 (Mode 2)	1 (LSB)	001 (Mode 2)	1 (LSB) (assumed)	change of codec mode 2 to 4
7	001 (Mode 2)	1	001 (Mode 2)	1 (assumed)	change of codec mode 2 to 4
8	001 (Mode 2)	0 (MSB)	001 (Mode 2)	1 (MSB) (assumed)	change of codec mode 2 to 4, mode command word collected, quality word collected (=111)

Fig. 2

From this it can be seen that in both the uplink and the downlink transmissions, the actual code word included in each frame represents the coding used in that frame. The multi-frame signaling bits (that is the multiple signaling bits that are partitioned and distributed in the frame sections of multiple

frames) represent different information in the downlink and the uplink.

In the downlink, the multi-frame signaling bits are transmitted from the network. They comprise the coding mode which the network has determined the mobile is to use. The network determines the actual coding modes for use in both the uplink and the downlink. (*See* Specification 6 ll.28-29.) These multi-frame bits are received on the downlink by the mobile and used by the mobile to code the uplink transmissions. In a "symmetrical" mode of operation, the codes used by the mobile are the same as those used by the network, and therefore the mobile could simply use the actual code modes in the frames received in the downlink from the network. Where symmetrical operation occurs, the multi-frame signaling bits introduces a layer of "protection," with the retrieved multi-frame bits being compared to the actual code modes contained in the downlink frames.

In the uplink, the multi-frame signaling bits are transmitted in the uplink from the mobile. They comprise a representation of the quality of the downlink as measured by the mobile. The bits forming the quality measurement are received from the uplink by the network. (Specification 5 ll.25-27; p.7 ll.1-3.)

Referring again to annotated FIG. 2 above, as previously noted, columns 2 and 3 represent information transmitted in the downlink, and columns 4 and 5 represent information transmitted in the uplink. FIG. 2 has been further modified so that the code words in the fourth column (*i.e.*, the uplink) are grouped by the dashed boxes. The arrows from column 3 (the frame gaps in the downlink) are directed to the dashed boxes in the uplink. This more clearly represents the relationship between the bits distributed among frame sections in multiple frames of the

downlink to the code words of column 4 (*i.e.*, the uplink code words). This relationship between the bits in frame section 3 (distributed among multiple frames) and the mode signal for the uplink is described on page 7, lines 4-20 of Applicants' specification. To underscore this relationship even further, the heading of column 3 could even more appropriately be modified to "Mode Command Bit for Uplink (sent in downlink)."

For example, a three-bit code word for the code mode to be used by the mobile to encode a transmission for the uplink is partitioned among the downlink section of three frames in the uplink transmission. In this example, the bits (one each) in a particular frame gap of frames 1-3 form the actual code mode of frames 1-3 in the uplink. This three-bit code word is then used in the uplink transmission in the prescribed manner, that is, it is used to indicate the code mode for the uplink transmission. (*See* Specification FIG. 1; p.4 l.13 to p.5 l.19.) A downlink transmission is described on page 4, lines 15-16.

The user data is coded using one mode of available modes according to the selected coding modes. (Specification 4 l1.17-19; p.5 l1.4-6.) In the preferred example, six different coding modes are supported. Three bit code words can be used to represent the coding modes (*Id.* at 4 l1.19-20.) The selected coding mode is used to channel code data which is already speech coded. At least one additional bit, a portion of the multi-frame signaling information, is also encoded in this frame with the speech. This additional bit is part of a three-bit information code word representing additional signaling information (*Id.* l1.25-26.)

The three-bit information code word for the additional signaling information may represent the already described six different coding modes available, or measurement information. (*Id.* l1.27-28.) The three bits of the additional signaling

information are transmitted one bit at a time in three frames. (*Id.* 11.28-30.) ("In this example it takes three frames within a multi-frame of six frames . . . to transmit the coding mode information as within each frame only one of three bits is transmitted, thus providing additional protection for the coding mode information.")

In the uplink, the respective frames similarly include the actual coding mode used for the respective frame, as coded by the mobile. (Specification 5 11.22-24.) In addition multi-frame bits are transmitted in three consecutive frames in the preferred embodiment (*Id.* 11.24-25,) as in the downlink. However, the three multi-frame bits represent a quality measurement for the downlink as measured by the mobile. (*Id.* 11.25-27.) The three bits allow eight different levels to be represented.

In decoding frames at both the mobile and the network, the code word used is that transmitted in the frame to be decoded in the respective downlink and uplink. (Specification 7 11.4-9.) In symmetrical operation, the fact that the uplink and downlink use the same actual code modes (code word x = code word y) can be used to introduce a high level of protection. The code word in the received frame at either end of the link should match the code word being used to generate frames at that end of the link. (*Id.* at 11.12-20.)

Referring to independent claim 29, in addition to the partitioning a second type of control information comprising a code word and transmitting a portion of that partitioned code word in successive frames of a multi-frame transmission, claim 29 further requires the steps of receiving the frames of the multi-frame transmission and reforming the sections of the second type of control information into the code word. This

aspect of claim 29 is described on page 5, lines 14-27 of the specification.

Independent claims 32 and 33 recite a communication device for a multi-frame transmission communication system. Such a system is illustrated in FIG. 3 and the accompanying text on page 7, lines 21-30. A communication device in the system is either the fixed part 1 or the mobile part 2. The claimed partitioning means for partitioning the second type of control information (as described above) is described on page 8, lines 1-8. The transmitter means for transmitting the first type of control information and a section of the second type of control information is described on page 8, lines 10-13.

Claim 33 recites a communication device as described above. This claim recites a receiving means for receiving frames of the multi-frame. As previously described, each frame of the multi-frame has a first type of control information and a section of a partitioned second type of control information. Claim 33 recites a receiving means, which is described on page 8, lines 12-24 of the specification. Claim 33 also recites a reforming means, the purpose of which is to reform the partitioned second type of control information back into the code word. This aspect of claim 33 is described on page 8, lines 19-24 and FIG. 1 (channel decoding and multi-frame signaling block 113 used for speech decoding and multi-frame signaling). (Specification 5 ll.14-19.)

Claim 35 recites a multi-frame transmission communication system containing a first device and a second device. As noted above, the first device and second device are the mobile part and the fixed part as illustrated in FIG. 3 and the accompanying text at page 7, line 22 to page 9, line 22. The first device has the partitioning means and the transmitter means described above. The second device has the receiver means and the means

for reforming the portioned second type of control information described above.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 32-38 are adequately supported by the specification as required by 35 U.S.C. § 112.
2. Whether claims 20-22, 25, 29, and 32-34 are unpatentable under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,418,558 to Roberts *et al.* (''Roberts *et al.*'') in view of U.S. Patent No. 6,014,374 to Paneth *et al.* (''Paneth *et al.*'').
3. Whether claims 23, 24, 31, 37, and 38 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Roberts *et al.* in view of Paneth *et al.* and further in view of U.S. Patent No. 6,134,220 to Le Strat *et al.* (''Le Strat *et al.*'')
4. Whether claims 26-28 are unpatentable under 35 U.S.C. § 103(a) over Roberts *et al.* in view of Paneth *et al.* and further in view of U.S. Patent No. 5,199,031 to Dahlin *et al.* (''Dahlin *et al.*'').
5. Whether claims 30 and 35 are unpatentable under 35 U.S.C. § 103(a) over Roberts *et al.* in view of Paneth *et al.* and further in view of U.S. Patent No. 6,35,460 to Wan (''Wan'').
6. Whether claim 36 is unpatentable over Roberts *et al.* in view of Paneth *et al.* in view of Wan and further in view of Le Strat *et al.*

ARGUMENT

A. Rejection Under 35 U.S.C. § 112

1. Claim 32

The Examiner rejected claim 32 under 35 U.S.C. § 112. Specifically, the Examiner stated that the specification fails to provide adequate support for the claimed partitioning means.

In the Examiner's view, the specification fails to support the limitation "partitioning means adapted to partition the second type of control information into a number of sections corresponding to a number of a plurality of consecutive frames in the multi frame." Applicants submit that there is ample support in the specification for this limitation.

Specifically, FIG. 2 clearly illustrates nine frames, each frame containing one bit of a partitioned multi-bit second type of control information. Referring to frames 0-2, code word 010 is partitioned, one bit each through multi-frame sequence 0-3. To be clear, FIG. 2 illustrates several sequences of such partitioned control information.

In the Examiner's view, this limitation is contradicted by the specification at page 4, lines 23-30. The portion of the specification to which the Examiner cites is clearly an example. Specifically, the cited portion of the specification states that, according to the GSM standard, a multi-frame sequence consists of six frames. In the context of the exemplary GSM standard, it would take three of those six frames to transmit a partitioned three bit code word (*i.e.*, one bit per frame).

The Applicants do not see how the cited portion of the specification contradicts other explicit support in the specification for the rejected claim. FIG. 2, as described above, clearly illustrates partitioning the code word 010 among three consecutive frames in the multi-frame sequence. Thus, FIG. 2 clearly supports partitioning the second type of control information (010) into a number of sections (3 sections, one each for 0, 1 and 0) corresponding to a number (3) of a plurality of consecutive frames (0-2) in the multi-frame.

The Examiner also states the claimed transmitter means in claim 32 is not supported by the specification because that claim recites "transmitter means adapted to transmit with each

of the plurality of frames in the multi-frame a section of the second type of control information."

Again, the Applicants are perplexed as to why the Examiner insists that this limitation is not adequately supported by the specification. Clearly, FIG. 2 illustrates that each frame contains a section of the partitioned second type of control information. Referring to frames 0-2, the partitioned code word is transmitted one section (*i.e.*, bit) at a time via consecutive frames in the multi-frame sequence. Thus, this limitation of claim 32 finds clear support in the specification.

2. Claim 33

With regard to claim 33, the Examiner contends that the limitation that requires "each frame is transmitted with a section of a partitioned second type of control information" lacks support in the specification. The Examiner provides no further support for this rejection other than the language quoted above. Again, referring to FIG. 2, there is illustrated partitioned sections of the second type of control information (0, 1, and 0) distributed among a plurality of consecutive frames (0-3). Again, Applicants submit that this limitation is clearly and adequately supported by the specification.

3. Claims 34-38

The Examiner contends that the transmitter means recited in claim 34 is not supported by the specification. The Examiner rejects claims 35-38 on this ground as well because these claims depend from claim 34. Thus, for purposes of this rejection, claims 34-38 stand together. Again, the Examiner does not state any specific independent basis for this rejection. The Examiner merely refers to the arguments in support of his rejection of claim 32 in support of this rejection. Again, Applicants submit that FIG. 2 provides clear and unambiguous support this limitation. To wit, the transmitter means (described at

Specification 8 ll.9-13) is adapted to transmit with each frame in a sequence of consecutive frames (*e.g.*, frames 0-2 in FIG. 2) in the multi-frame, the first type of control information (FIG. 2 col.2) and a section of a second type of control information (FIG. 2 col.3), wherein each section (0, 1, and 0) is placed in a separate frame (frames 0, 1, and 2, in FIG. 2 respectively) the number of sections (3) corresponding to the number of frames (3) in the sequence of frames.

For the foregoing reasons, Applicants respectfully request that the Board reverse the Examiner's rejection of claims 32-38 pursuant to 35 U.S.C. § 112.

B. Rejection Of Claims 20-22, 25, 29 And 32-34 Under 35 U.S.C. § 103(a) As Being Obvious Over U.S. Patent No. 6,418,558 To Roberts *et al.* ("Roberts *et al.*") In View Of U.S. Patent No. 6,014,374 To Paneth *et al.* ("Paneth *et al.*").

1. Claims 20 and 25.

Referring to FIG. 9 of Roberts *et al.*, that figure clearly illustrates 32 channels in a frame. In the text accompanying FIG. 9, Roberts *et al.* states "[e]ach DS0 in the CTSU input has been modified by appending a ninth bit which can carry multi-frame timing, signaling information and control/status messages (FIG. 9). This modified DS0 is referred to as a "DS0+". The ninth bit signal (NBS) carries a pattern which is updated each frame and repeats every 24 frames. This maps each 64 kbps DS0 from the network into a 72 kbps DS0+. Thus, the 24 DS0 channels available on each DS1 are formatted along with overhead information into 24 DS0+ channels on each of the four CTSU input streams." (Specification col.30 ll.31-41(emphasis added).)

Clearly Roberts *et al.* does not disclose or suggest a method or apparatus in which control information of the second

type is partitioned among consecutive frames and transmitted, wherein the second type of control information is a code word that is reassembled and used upon receipt. The Examiner acknowledged this fact in paragraph 6.1 of the Official Action mailed December 7, 2005. The Examiner cites Paneth *et al.* and stated that it would be obvious for one skilled in the art to modify Roberts *et al.* with the method of Paneth *et al.* The Examiner observes that Paneth *et al.* teaches control information comprising a code word. The Examiner contends that, this disclosure alone would make it obvious to one skilled in the art to combine Paneth et al with Roberts *et al.* in a manner that would render Applicants' invention obvious.

At the outset, Applicants submit that the Examiner has failed to meet his burden for a *prima facie* case of obviousness under 35 U.S.C. § 103. It is axiomatic that one must show some motivation or suggestion to combine the references from the references themselves. "To establish a *prima facie* case of obviousness [the accused infringer] must show 'some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.'" *Tec Air, Inc. v. Denso Mfg. Mich., Inc.*, 192 F.3d 1353, 1359 (Fed. Cir. 1999) (quoting *In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988)). "Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference." *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000). Other than stating that Paneth *et al.* describes control information comprising a code word, the Examiner has not provided any support for combining the two references in support of this rejection. For this reason alone it is respectfully requested

that the Examiner's rejection of claim 20 in view of Paneth *et al.* be reversed.

Furthermore, the combined references do not render the claimed invention obvious. As the Examiner admits, Roberts *et al.* does not describe partitioning the code word. The ninth frame signaling bit described in Roberts *et al.* is not a section of a code word. Roberts *et al.* does not use the information conveyed by the ninth frame signaling bit as a code word. Thus, one skilled in the art would not substitute the code word in Paneth *et al.* for the information conveyed by the ninth frame signaling bit in Roberts *et al.* There is simply no suggestion in either reference to partition a code word into sections and transmit the code word one section at a time over consecutive frames.

2. Claim 21

Claim 21 recites that the second type of control information is for use on receipt of the multi-frame. This is clearly not obvious in view of Roberts *et al.* in view of Paneth. In addition to the fact that the Examiner has not articulated a basis for combining these references (as required to support a *prima facie* case of obviousness as noted above), the combined teachings of the two references do not teach using the partitioned code word when the multiple frames carrying the partitioned code word are received. Roberts *et al.* does describe a ninth bit in each gap of the frames illustrated in FIG. 9 of that reference. But Roberts *et al.* does not teach partitioning this information into sections of multiple, *consecutive* frames. Since neither Roberts *et al.* nor Paneth *et al.* disclose or suggest partitioning a code word among multiple consecutive frames, the combined teachings of these references clearly do not disclose or suggest using the

partitioned second type of control information on receipt of the multi-frame.

3. Claim 22

Claim 22 recites the step of, on receipt of the multi-frame, reforming the second type of control information. This is clearly not obvious in view of Roberts *et al.* in view of Paneth. In addition to the fact that the Examiner has not articulated a basis for combining these references as required to support a *prima facie* case of obviousness as noted above, the combined teachings of the two references do not teach using the partitioned code word when the multiple frames carrying the partitioned code word are received. Roberts *et al.* does describe a ninth bit in each gap of the frames illustrated in FIG. 9 of that reference. But Roberts *et al.* does not teach partitioning this information into sections of multiple, *consecutive* frames. Since neither Roberts *et al.* nor Paneth et al disclose or suggest partitioning a code word among multiple consecutive frames, the combined teachings of these references clearly do not disclose or suggest reforming the partitioned second type of control information on receipt of the multi-frame.

4. Claim 29

Claim 29 recites a method in which the second type of control information comprises a code word that is partitioned into sections and each section is transmitted with a different frame in a plurality of consecutive frames. Claim 29 further recites that the second type of control information is reformed into the code word after transmission. As such, claim 29 is not rendered obvious by Roberts *et al.* in view of Paneth *et al.* Specifically, in addition to the fact that the references are not properly combined, as noted above, the Applicants submit that the references, either alone or in combination do not

disclose or suggested transmitting a second type of control information into multiple sections and transmitting each section with a different frame in a multi-frame.

As noted above, Roberts *et al.* does not disclose partitioning a code word. Although the Examiner attempts to equate the ninth signaling bit in Roberts *et al.* with the partitioned second type of control information disclosed and claimed by Applicants, the Examiner has cited no basis from the reference itself for this. As noted above, Roberts *et al.* describes placing a ninth bit in each gap of a frame, but does not describe partitioning information into sections and transmitting each section in a *different* frame. Although Paneth does describe code words at column 16, lines 39-50, Paneth does not describe partitioning code words into sections and transmitting those sections with different frames.

5. Claim 32

Claim 32 recites a communication device in which a code word is partitioned into sections and transmitted. Each section is transmitted in a different frame of a plurality of consecutive frames.

In his rejection, the Examiner characterizes the ninth bit described in Roberts *et al.* as a second type of control information. The Examiner states that the control information is partitioned into 24 bits and each bit is sent in one frame.

From these remarks, it is clear that the Examiner has misconstrued Roberts *et al.* Referring to FIGs. 9 and 10, it is clear that Roberts *et al.* contemplates partitioning the bits into the gaps within a single frame. The description of FIG. 9 reinforces this interpretation, "FIGS. 9, 10, 11 show data frame structures and frame signaling utilized in the HDT of FIG. 3." (Roberts *et al.* Col.15 ll.22-24.) Referring to FIG. 9 of Roberts *et al.*, the entire illustrated structure is identified

as "320 BIT PERIODS PER 125 μSEC FRAME." Therefore, Roberts *et al.* clearly does not disclose or suggest partitioning a second type of control information into sections *and* transmitting those sections in different ones of a plurality of frames as required by claim 32.

Paneth does not describe partitioning the code words described in that reference. The Applicants maintain that Roberts *et al.* is not properly combined with Paneth to teach partitioning a second type of control information comprising a code word among multiple frames. Simply, neither reference teaches partitioning information in the claimed manner. It is for this reason that Applicants maintain that their claim 32 is not obvious under Roberts *et al.* in view of Paneth *et al.* The Applicants respectfully request reversal of the Examiner's rejection of claim 32.

6. Claim 33

Claim 33 recites a communication device in which a second type of control information comprising a code word is partitioned into sections, each section transmitted in a different frame of a plurality of consecutive frames.

In the rejection, the Examiner characterizes the ninth bit described in Roberts *et al.* as a second type of control information. The Examiner states that the control information is partitioned into 24 bits and each bit is sent in one frame.

From these remarks, it is clear that the Examiner has misconstrued Roberts *et al.* Referring to FIGs. 9 and 10, it is clear that Roberts *et al.* contemplates partitioning the bits into the gaps within a single frame. The description of FIG. 9 reinforces this interpretation, "FIGS. 9, 10, 11 show data frame structures and frame signaling utilized in the HDT of FIG. 3." (Roberts *et al.* col.15 ll.22-24.) Referring to FIG. 9 of Roberts *et al.*, the entire illustrated structure is identified

as "320 BIT PERIODS PER 125 μSEC FRAME." Therefore, Roberts *et al.* clearly does not disclose or suggest partitioning a second type of control information into sections *and* transmitting those sections in different ones of a plurality of consecutive frames as required by claim 32.

Paneth does not describe partitioning the code words described in that reference. The Applicants maintain that Roberts *et al.* is not properly combined with Paneth to teach partitioning a second type of control information comprising a code word among multiple frames. Simply, neither reference teaches partitioning information in the claimed manner. It is for this reason that Applicants maintain that their claim 33 is not obvious under Roberts *et al.* in view of Paneth *et al.* The Applicants respectfully request reversal of the Examiner's rejection of claim 33.

7. Claim 34

Claim 34 recites a multi-frame transmission system, the system having a first device that partitions a code word for the second type of control information into a number of sections, each section being transmitted in a separate frame in a consecutive sequence of frames. The claimed system has a transmitter means adapted to transmit the multiple frames among which the partitioned code word is distributed. The claimed system also has a receiver means adapted to receive the multiple frames and reform the partitioned code word.

The Examiner acknowledges that Roberts *et al.* does not expressly teach control information comprising a code word. The Examiner states that Paneth teaches control information comprising a code, and the Applicants do not disagree with this observation. However, the Examiner goes on to state that Paneth describes reforming the control information. The Applicants' disagree with this characterization. Paneth describes encoding

the twelve bit code word into ten bits, and decoding the code word upon receipt. Paneth does not describe *reforming* the code word described therein. As previously noted, Paneth does not disclose or suggest partitioning the code word in the first instance. As such, Paneth clearly does not contemplate reforming the code word upon receiving it.

From the foregoing, it is clear that Roberts *et al.* and Paneth cannot be combined to render Applicants' claims 20-22, 25, 29, and 32-34 obvious under 35 U.S.C. § 103(a). The Applicants respectfully request that the Board reverse the Examiner's obviousness rejection in this regard.

C. Rejection of claims 23, 24, 31, 37 And 38 Under 35 U.S.C. § 103(a) As Being Obvious Over Roberts *et al.* In View of Paneth *et al.*And Further In View Of U.S. Patent No. 6,134,220 To Le Strat *et al.* ("Le Strat *et al.*")

1. Claim 23

Claim 23 depends from claim 20. Claim 20 recites a method of transmission in which a code word is partitioned into sections among multiple consecutive frames. The multiple consecutive frames are then transmitted. In claim 23, the transmission is in a downlink of a communication system. Also, according to claim 23, the first type of control information is the coding mode in the downlink and the second type of control information is a coding mode applied in the uplink.

As previously noted, claim 20 is not obvious in view of the combination of Roberts *et al.* and Paneth. Neither reference describes partitioning a code word into sections among multiple consecutive frames and transmitting those frames. Tellingly, the Examiner does not contend that such partitioning is taught by Le Strat *et al.* The Examiner cites LeStrat *et al.* merely

because that reference describes transmitting first and second coding modes to be applied in the downlink and the uplink, respectively. The Examiner does not explain what, in the references themselves, would teach one skilled in the art to substitute the coding modes in LeStrat *et al.* for the first and second type of control information described in Roberts *et al.* For this reason alone, Examiner has failed to make a *prima facie* case of obviousness based on the cited combination of references.

Furthermore, to the extent that LeStrat does describe first and second coding modes, LeStrat *et al.* clearly does not disclose or suggest partitioning the second type of control information in the claimed manner and transmitting that information as recited in claim 23. It is for this reason that the Applicants respectfully request that the Examiner's rejection of claim 23 be reversed.

2. Claim 24

Claim 24 depends from claim 20. Claim 20 recites a method of transmission in which a code word is partitioned into sections among multiple consecutive frames. The multiple consecutive frames are then transmitted. In claim 24, the transmission is in an uplink of a communication system. Also, according to claim 24, the first type of control information is the coding mode in the uplink and the second type of control information represents a downlink quality measured in the downlink.

As previously noted, claim 20 (from which claim 24 depends) is not obvious in view of the combination of Roberts *et al.* and Paneth. Neither reference describes partitioning a code word into sections among multiple consecutive frames and transmitting those frames. Tellingly, the Examiner does not contend that such partitioning is taught by Le Strat *et al.* The Examiner

cites LeStrat *et al.* for its description of transmitting coding modes in the uplink and a means for determining and transmitting at least one indication representative of transmission quality in the uplink. As noted above, the Examiner does not explain what, in the references themselves, would teach one skilled in the art to substitute the coding mode/indications of transmission quality in LeStrat *et al.* for the control information/ninth bit signaling information described in Roberts *et al.* For this reason alone, the Examiner has failed to make a *prima facie* case of obviousness based on the cited combination of references.

Furthermore, to the extent that LeStrat does describe transmitting a coding mode and an indication of downlink transmission quality in the uplink, LeStrat *et al.* clearly does not disclose or suggest partitioning the second type of control information in the claimed manner and transmitting that information as recited in claim 24. It is for this reason that the Applicants respectfully request that the Examiner's rejection of claim 24 be reversed.

3. Claim 31

Claim 31 depends from claim 29. Claim 29 recites a method of transmission in which a code word is partitioned into sections among multiple consecutive frames which are received and reformed into the code word on the receiving end. In claim 31, frames are encoded based upon the received and reformed code word.

As previously noted, claim 29 is not obvious in view of the combination of Roberts *et al.* and Paneth *et al.* Neither reference describes receiving a code word that has been partitioned into sections among multiple consecutive frames and transmitted, and reforming that code word on receipt. Tellingly, the Examiner does not contend that such partitioning

is taught by Le Strat *et al.* The Examiner cites LeStrat *et al.* merely for its description of encoding frames for transmission based upon the received control information. Note that, in LeStrat *et al.*, the received control information is not partitioned into sections (having not been sectioned in the first instance, the control information is clearly not reformed). The Examiner does not explain what, in the references themselves, would teach one skilled in the art to substitute the coding mode in LeStrat *et al.* for the control information/ninth bit signaling information described in Roberts *et al.* Nor does the Examiner explain how the cited combination of references would make it obvious to one skilled in the art to partition the coding information in one transmission link, transmit it in multiple frames, reform it on the receiving end and use the coding information to encode information for a different transmission link. For this reason alone, the Examiner has failed to make a *prima facie* case of obviousness based on the cited combination of references.

Furthermore, to the extent that LeStrat *et al.* does describe encoding a transmission using a received coding mode, LeStrat *et al.* clearly does not disclose or suggest that the received coding mode was: (1) received in sections partitioned among multiple frames; and (2) reformed. It is for these reasons that the Applicants respectfully request that the Examiner's rejection of claim 24 be reversed.

4. Claims 37 and 38

Claims 37 and 38 depend from claim 34, which recites a multi-frame transmission system, the system having a first device that partitions a code word for the second type of control information into a number of sections, each section being transmitted in a separate frame in a consecutive sequence of frames. The claimed system has a transmitter means adapted to

transmit the multiple frames among which the partitioned code word is distributed. The claimed system also has a second device with a receiver means adapted to receive the multiple frames and reform the partitioned code word. Claim 37 further specifies that the first device is a fixed part of the mobile communication systems and the second device is the mobile part. Claim 37 also states and that there is an uplink established from the mobile part to the fixed part. Claim 38 further specifies that the first device is the mobile part and the second device is the fixed part and that there is a downlink established from the fixed part to the mobile part.

As previously noted, claim 34 is not obvious in view of the combination of Roberts *et al.* and Paneth *et al.* As discussed in detail above, neither reference describes a system in which a first device transmits a code word that has been partitioned into sections among multiple consecutive frames, and a second device receives and reforms that code word. Tellingly, the Examiner does not contend that such partitioning is taught by Le Strat *et al.* The Examiner cites LeStrat *et al.* merely for its description of first and second devices being fixed and mobile parts of a communication system. Note that, in LeStrat *et al.* neither device partitions a code word into sections and distributes those sections among multiple frames for transmission.

The Examiner does not specifically identify the first and second devices in Roberts *et al.* and Paneth *et al.* and why one skilled in the art would substitute the fixed and mobile devices described in Le Strat *et al.* for the devices disclosed in the primary references. The Applicants submit that is not obvious to swap a fixed system such as described in Roberts *et al.* and Paneth *et al.* with a mobile system. The Examiner has not identified what, from the references themselves, would cause one

skilled in the art to substitute fixed and mobile devices described in Le Strat *et al.* for the fixed devices described in the primary references. For this reason, Examiner has failed to make a prima facie case that claims 37 and 38 are obvious based on the cited combination of references.

D. Rejection Of Claims 26-28 As Obvious Under 35 U.S.C. § 103(a) Over Roberts *et al.* In View Of Paneth *et al.* And Further In View Of U.S. Patent No. 5,199,031 To Dahlin *et al.* ("Dahlin *et al.*").

1. Claims 26 and 27

Claims 26 and 27 depend from claim 20 (via claim 25). Claim 20 recites a method of transmission in which a code word is partitioned into sections among multiple consecutive frames. The multiple consecutive frames are then transmitted. The transmitted frames also contain data (per claim 25). In claim 26, the transmitting step further comprises channel encoding the claimed data and the section of the second type of control information. In claim 27, the transmitting step further comprises channel encoding the first type of control information.

As previously noted, claim 20 is not obvious in view of the combination of Roberts *et al.* and Paneth. Neither reference describes partitioning a code word into sections among multiple consecutive frames and transmitting those frames. Tellingly, the Examiner does not contend that such partitioning is taught by Dahlin. The Examiner contends that Dahlin teaches that "the step of transmitting comprises channel encoding the data and the section of the second type of information." The Examiner cites column 4, lines 14-35 of Dahlin in support. However, while Dahlin does teach that FACCH and SACCH information are encoded for transmission, Dahlin does not mention partitioning control information (*e.g.*, FACCH) and transmitting those sections in

multiple frames. Consequently, because none of the cited references disclose partitioning/sectioning/transmitting a second type of control information in the claimed manner, the Examiner has failed to make a *prima facie* case of obviousness based on the cited combination of references.

It is for this reason that Applicants respectfully request the Examiner's obviousness rejection of claims 26 and 27 to be reversed.

2. Claim 28

Claim 28 depends from claim 20 (via claim 27). Claim 20 recites a method of transmission in which a code word is partitioned into sections among multiple consecutive frames. The multiple consecutive frames are then transmitted. The transmitted frames also contain data (per claim 25). In claim 28, the transmitting step further comprises frame formatting and interleaving the claimed first type of control information, data, and section of the second type of control information.

As previously noted, claim 20 is not obvious in view of the combination of Roberts *et al.* and Paneth *et al.* Neither reference describes partitioning a code word into sections among multiple consecutive frames and transmitting those frames. Tellingly, the Examiner does not contend that such partitioning is taught by Dahlin. The Examiner contends that Dahlin (along with Paneth and Roberts *et al.*) teaches "frame formatting and interleaving the channel coded first type of control information, data and section of the second type of information." The Examiner cites only to specific portions of Roberts *et al.* that describe interleaving to support this argument. The portions to which the Examiner cites refer generally to: "the transport of telephony (*i.e.*, data) and control information over the HFC (hybrid fiber-coaxial) network"

and "the telephony payload channels and IOC channels of the 6 MHz band are interspersed . . ." Roberts *et al.* generally, and these portions specifically, do not disclose or suggest partitioning a code word into sections.

The cited references therefore fail to disclose or suggest the frame formatting and interleaving step of claim 28 in the context of a method in which a second type of control information comprising a code word is partitioned into sections and transmitted via multiple consecutive frames. It is for this reason that Applicants respectfully request that the Examiner's obviousness rejection of claim 28 be reversed.

E. The Rejection Of Claims 30 and 35 Under 35 U.S.C. § 103(a) Over Roberts *et al.* In View Of Paneth *et al.* And Further In View Of U.S. Patent No. 6,35,460 To Wan ("Wan").

Claim 30 depends from claim 29. Claim 29 recites a method in which the partitioned code word, having been transmitted in sections such that each section is in a different frame of a consecutive sequence of frames, is received and reformed into the code word. As previously noted, claim 29 is not obvious in view of the combination of Roberts *et al.* and Paneth. Neither reference describes receiving a code word that has been partitioned into sections among multiple consecutive frames and transmitted, and reforming that code word on receipt.

Claim 30 further recites decoding the received frames using a mode code derived from the first type of control information. The Examiner contends that Wan's description of the step of decoding using a mode code derived from the first type of control information is sufficient, in and of itself, to render claim 30 obvious in view of the Roberts *et al.*/Paneth *et al.* combination of references. However, Wan clearly does not disclose or suggest reforming a code word that has been sectioned among consecutive frames and transmitted. Referring to

FIG. 4 of Wan and the accompanying description (Specification col.6 ll.13-34), the four types of control information are placed in different frames (210, 212, 214, and 216) of the multi-frame. Wan clearly does not teach or suggest partitioning a code word and distributing sections of the code word among consecutive frames of a multi-frame sequence. It is for this reason that Applicants submit the Examiner's rejection of claim 30 be reversed.

Claim 35 depends from claim 34. Claim 34 is directed to a multi-frame transmission system. The claimed system has a second device that includes a receiver means that is adapted to receive a multi-frame transmission from a first device. The receiver means also has a means for reforming a code word that has been partitioned into sections, each section placed in a different frame of a consecutive sequence of multi-frames and transmitted from a first device. Applicants previously pointed out the reasons why claim 34 was not obvious under Roberts *et al.* in view of Paneth. Simply, nothing in either reference teaches a system with a first device that transmits a code word partitioned into sections, each section placed in a different frame of a sequence of consecutive frames and a second device that receives and reforms that code word. Such a system is not disclosed by or suggested in Wan *et al.*

Claim 35 specifically recites that the second device is adapted to decode the frames of the multi-frame transmission using the first type of control information contained in a received frame.

The Examiner contends that Wan's description of the step of decoding using a mode code derived from the first type of control information is sufficient, in and of itself, to render claim 35 obvious in view of the Roberts *et al.*/Paneth *et al.* combination of references. However, as noted above, Wan clearly

does not disclose or suggest reforming a code word that has been sectioned among consecutive frames and transmitted. While Wan may teach a system in which a second device decodes frames of a multi-frame in dependence on the control information in the received frame, the cited combination of reference do not teach decoding a received frames of a multi-frame sequence, each frame having a section of a code word. It is for this reason that Applicants respectfully request that the Examiner's rejection of claim 35 be reversed.

F. The Rejection Of Claim 36 Over Roberts *et al.*In View Of Paneth *et al.* In View Of Wan And Further In View Of Le Strat *et al.*

Claim 36 depends from claim 35, which in turn, depends from claim 34. Claim 34 recites a multi-frame communication system having a first device with a partitioning means and a second device having a receiver means. Claim 36 further recites an encoding means for transmission using a mode code based on the reformed code word (*i.e.* the code word partitioned by the partitioning means and reformed by the receiver means) and a transmission mean for transmitting the encoded data to the first device.

By the Examiner's own admission, Roberts *et al.*, Paneth *et al.* and Wan to not expressly teach a transmission system with a second device that has an encoding means for data transmission that, in turn, uses a code mode based on the reformed control information and a transmission means for transmitting the data to the first device. However, the Examiner contends that Le Strat *et al.* teaches an encoding means for encoding data for transmission using a mode code based on reformed control information. The Examiner further argues, without explanation, that it would have been obvious to modify the communication systems of Roberts *et al.*, Paneth *et al.* and Wan with the

encoding means of Le Strat *et al.* Because the Examiner has failed to articulate any basis for what, in the references themselves, suggests to one skilled in the art that the teachings might be combined, the Applicants submit that the Examiner has not met the burden for establishing a *prima facie* case for obviousness of claim 36. *Tec Air,* 192 F.3d at 1359 (quoting *In re Fine,* 837 F.2d at 1073.

As previously noted, Le Strat *et al.* does not disclose or suggest partitioning a coding word into sections and distributing each section among different, consecutive frames. Accordingly, Le Strat et. does not disclose or suggest reforming the code word so partitioned. Certainly the cited portions of Le Strat el does not support the Examiner's argument that Le Strat al. describes encoding using a reformed code word as required by claim 36. While Le Strat *et al.* does describe changing a transmission mode in response to a coding mode at column 4, lines 39-50, Le Strat *et al.* does not describe reforming a received coding mode as called for in claim 36.

In their response to the Examiner' rejection of claim 34, the Applicants noted that Paneth does not disclose or suggest reforming the code word. This deficiency in the Paneth disclosure is not remedied by Le Strat *et al.* Neither reference discloses or suggests reforming a partitioned code word, and certainly does not disclose or suggest partitioning the code word in the manner required by claim 34. Therefore, the cited combination of references does not render obvious claim 36, in which the encoding means uses a code mode based on a reformed code word.

It is for this reason that Applicants respectfully request that the Examiner's rejection of claim 36 be reversed.

CONCLUSION

For the reasons set forth above, this Honorable Board should reverse the rejection as to all claims on appeal.

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Respectfully submitted,

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APPENDIX A - CLAIMS

20. A method of transmission in a multi-frame system, each frame of the multi-frame system being associated with a first type of control information, there further being provided a second type of control information comprising a code word, the method comprising:

a. partitioning the second type of control information into a number of sections;

b. forming a plurality of consecutive data frames for transmission, the number of consecutive data frames corresponding to the number of sections into which the code word is partitioned; and

c. transmitting with each frame of the plurality of consecutive data frames in the multi-frame:

i. the first type of control information for the respective frame; and

ii. a section of the partitioned second type of control information.

21. A method according to claim 20 wherein the second type of control information is for use on receipt of the multi-frame.

22. A method according to claim 20 further comprising the step of, on receipt of the multi-frame, reforming the second type of control information.

23. A method according to claim 20 wherein the transmission is in a downlink of a communication system, the first type of control information representing a coding mode applied in the downlink, and the second type of control

information representing a coding mode to be applied in an uplink of the communication system.

24. A method according to claim 20 wherein the transmission is in an uplink of a communication system, the first type of control information representing a coding mode applied in the uplink, and the second type of control information representing a downlink quality measured in the downlink.

25. A method according to claim 20 wherein the step of transmitting further comprises transmitting data with each frame.

26. A method according to claim 25 wherein the step of transmitting comprises channel encoding said data and said section of the second type of control information.

27. A method according to claim 26 further comprising channel coding the first type of control information.

28. A method according to claim 27 further comprising frame formatting and interleaving the channel coded first type of control information, data, and section of the second type of control information.

29. A method of transmission in a multi-frame system, each frame of the multi-frame system being associated with a first type of control information, there further being provided a second type of control information comprising a code word, wherein each frame of a plurality of consecutive frames in the multi-frame sequence is transmitted with the first type of control information for the respective frame; and a section of a partitioned second type of control information the number of frames of the plurality of consecutive frames in the multi-frame

sequence corresponding to the number of sections into which the control information is partitioned, the method comprising:

a. receiving frames of the multi-frame; and

b. reforming the sections of the second type of control information into the code word.

30. A method according to claim 29 further comprising the step of decoding the received frames in accordance with a mode code derived from the first type of control information for each frame.

31. A method according to claim 29 further comprising encoding frames for transmission depending on the reformed code word.

32. A communication device for a multi-frame transmission communication system, each frame of the communication system being associated with a first type of control information, there further being provided a second type of control information comprising a code word, the communication device comprising:

a. partitioning means adapted to partition the second type of control information into a number of sections corresponding to a number of a plurality of consecutive frames in the multi-frame;

b. transmitter means adapted to transmit with each of the plurality of frames of the multi-frame:

i. the first type of control information for the respective frame; and

ii. a section of the second type of control information.

33. A communication device for a multi-frame transmission communication system, each frame of the communication system being associated with a first type of control information, there further being provided a second type of control information comprising a code word, wherein each frame of a plurality of consecutive frames in the multi-frame transmission communication system is transmitted with the first type of control information for the respective frame; and a section of a partitioned second type of control information, the communication device comprising:

a. receiving means for receiving frames of the multi-frame; and

b. reforming means for reforming the sections of the second type of control information into the code word.

34. A multi-frame transmission communication system, each frame of the communication system being associated with a first type of control information, there further being provided a second type of control information comprising a code word, the communication system comprising:

a. a first device having a partitioning means adapted to partition the code word of the second type of control information into a number of sections, and transmitter means adapted to transmit with each frame of the sequence of consecutive frames in the multi-frame, the first type of control information for the respective frame, and a section of the second type of control information wherein each section is placed in a separate frame in a sequence of consecutive frames, the number of sections corresponding to the number of frames in the sequence of frames; and

b. a second device having a receiver means adapted to receive frames of a multi-frame transmission from the first device, and means for reforming the partitioned second type of control information into the code word.

35. A multi-frame transmission communication system according to claim 34 wherein the second device is adapted to decode the frames of the multi-frame transmission in dependence on the first type of control information contained in a received frame.

36. A multi-frame transmission communication system according to claim 35 wherein the second device further comprises encoding means for encoding data for transmission using a mode code based on the reformed code word and transmission means for transmitting the encoded data to the first device.

37. A multi-frame transmission communication system according to claim 34 wherein the first device is a fixed part of the communication system and the second device is a mobile part of the communication system and there is an uplink established from the mobile part of the communication system to the fixed part of the communication system.

38. A multi-frame transmission communication system according to claim 34 wherein the first device is a fixed part of the communication system and the second device is a mobile part of the communication system and there is downlink established from the fixed part of the communication system to the mobile part of the communication system.

APPENDIX B - EVIDENCE

None.

APPENDIX C - RELATED PROCEEDINGS

None.

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